*BIOSPHERIC SCIENCES BRANCH HIGHLIGHTS*
*July – August 2011*

***Awards***

*Four lab members were honored with a 2011 HOBI award on August 30th. Science and Technical Awards went to Michael Talyor and Larry Corp, Lisa Henderson received an Administrative and Business Support Award, and Betsy Middleton was honored with a Career Achievement Award. Congratulations to this year's winners!*

***Education and Public Outreach***

*Assaf Anyamba (618, USRA) presented his work on "Applications of Satellite data for Agricultural Monitoring, Climate and Vector-borne Diseases" to participants in teachers in residence at Goddard as part of the NASA Endeavor Fellows summer internship program. The training was part of a larger effort to develop a unit on the water cycle for Terra education and public outreach, an effort coordinated by Holli Riebeek (613.2, Sigma Space).*

***External Interactions***

*Molly Brown (618), Jim Collatz (618) and Vanessa Escobar (618, Sigma Space) attend the Science Definition Team meeting of the Carbon Monitoring System (CMS) Flux Pilot in Pasadena, California on July 12-13, 2011. The meeting gathered Flux Pilot scientists and Science Team members to review progress to date and plan for future pilot project efforts. The next CMS SDT meeting will be held at Goddard on September 21-22, 2011.*

*Molly Brown (618) attended the Climate Adaptation Science Investigation team meeting at GISS in New York City on July 18-19, 2011. Representatives from each NASA Center were participated in the meeting with NASA leadership, including Dr. Jack Kaye, Associate Director for Research, Earth Science Division and Olga Dominguez, Assistant Administrator for NASA's Office of Strategic Infrastructure. The meeting focused on reviewing progress that the team has made over the past year in conducting climate-relevant research, and was led by Dr. Cynthia Rosenzweig, an expert in analyzing institutional exposure to climate change.*

*Elizabeth Middleton (618) gave an invited presentation on NASA's EO-1 Hyperion and plans for the Hyperspectral Infrared Imager (HyspIRI) mission at the Hyperspectral Imaging and Sounding of the Environment (HISE) meeting of the 2011 Optics and Photonics Congress on Imaging and Applied Optics in Toronto, Canada, July 11-13.*

*Marc Imhoff (618) served on a National Academy of Sciences Panel on Urbanization and Weather (July 27 –29) in Woods Hole, MA. Dr. Imhoff*

*presented a NASA perspective on studies related to urbanization, and provided the committee with input and recommendations about the technologies available to address a wide range of urban environmental issues. The study group was especially interested in multi-scale energy balance modeling and the potential for NASA technologies to provide urban surface temperatures as an indicator of urban heat stress on human health and energy consumption. Additional participants included NAS staff, meteorologists, climate scientists, stakeholders from the National Weather Service, White House, and city managers from Washington D.C., Chicago, and New York City.*

*The 2011 HyspIRI Science Workshop is underway this week in Washington DC (August 23-25th), with a range of presentations from scientists in 618. Betsy Middleton will present on "Prototyping for HyspIRI with Hyperion Data," Steve Ungar will discuss "Lunar Calibration," Dave Landis and Dan Mandl (Code 581 on IPM) will present "Lessons Learned from MODIS, Landsat, and Data Systems." Branch members Qingyuan Zhang, Petya Campbell, and Bob Knox will be presenting posters on prototype HyspIRI data products.*

***Funded proposals***

*Lola Fatoyinbo (618) was selected as a member of the JAXA's ALOS Carbon and Kyoto (K&C) phase 3 (2011-2014) science team. Her proposal was entitled 'Mangrove extent, change and structure in Africa and the Americas.' The project will use dual-pole and quad-pole ALOS PALSAR data to derive estimates of mangrove forest structure for Africa and Latin America.*

*Lola Fatoyinbo (618), Ekaterina Verner (667), and Leon Offman (Catholic University) were awarded a Supplemental Education Award for ROSES Investigators (EDUC) entitled: ' Using Space Imaging Technology to study Earth and Sun (SITES)'. With this additional support, the project will develop instructional modules for students in grades K-8 based on images of the Sun and the Earth taken with NASA space missions or generated using computer simulations. In addition, the project will provide training for elementary school teachers at 4 private and 4 public charter schools in the D.C. area that serve primarily ethnic minority students.*

*Jim Collatz (618) and Doug Morton (618) were funded to conduct research in support of the forthcoming National Climate Assessment. The 2-year project, entitled "Assessment of Climate Change Impacts on Fire Activity in the US," will explore the potential for increases in fire activity due to climate change. The proposed research will model fire-climate interactions using CASA-GFED (http://www.globalfiredata.org) and near-term climate projections (10-30 years) developed for the IPCC Fifth Assessment Report (AR5). The goal of the project is to assess how climate change impacts on US fire activity will impact natural*

*environment (ecosystems), agriculture, forestry, land resources and land use change, and human health and welfare.*

***Outstanding Accomplishments***

*Congratulations to the Terra and EO-1 Teams, led by Mark Imhoff (618) and Elizabeth Middleton (618), respectively. Both Terra and EO-1 received outstanding reviews from the 2011 Senior Review Panel. In the words of the panel report, "TERRA is a huge success, and continuation of the 11 year TERRA data record from the five instruments (ASTER, CERES, MISR, MODIS, MOPITT) is critical to a wide array of earth system science. It is a workhorse for regional-to-global scale monitoring." EO-1 was approved for extended mission service for the next two years, with specific praise for the EO-1 team from the Senior Review Panel for successful efforts to automate data acquisition and processing, and the value of EO-1 data for disaster management.*

***Projects***

*Bruce Cook (618) and Larry Corp (618, Sigma Space) recently completed flight testing and initial data collection with G-LiHT (Goddard's LiDAR, Hyperspectral & Thermal airborne imager). G-LiHT was developed to study ecosystem structure with support from Code 618 and the GSFC IRAD Program. Following successful test flights near Langley and Wallops Island, G-LiHT collected data in North Carolina and Maryland for the Carbon Monitoring System (CMS) Biomass Pilot Project. Starting in August, the G-LiHT team will embark on a month-long airborne campaign to collect data on forest structure and function across the eastern US as part of AMIGACarb (PI Ross Nelson, 618).*

*The Spectral Bio-Indicator/Light Use Efficiency Project (PI Betsy Middleton, 618) completed four field measurement campaigns in June-August at the nearby USDA experimental agricultural center in Greenbelt, MD. The project made repeated measurements over a corn field throughout the summer, capturing healthy and drought-stressed plants with spectroradiometers and physiological measurements.*

*Jon Ranson (618) and Lola Fatoyinbo (618) are leading the Eco-3D field campaign this week. The team of GFSC scientists will be making airborne measurements over the Northeast US and Canada with three sensors: the Digital Beamforming SAR (DB-SAR; PI Rafael Rincon 619.1); the dual-wavelength, polarimetric, photon counting lidar (SIMPL; PI Dave Harding 698), and the optical, multi-wavelength Cloud Absorption Radiometer (CAR, PI Charles Gatebe 613). The extensive campaign also involves field measurements in a range of forest types in Maine, New Hampshire, and Quebec, led by branch members Paul Montesano (618, Sigma Space), Guoqing Sun (618, UMD), and collaborator Wenli Huang (UMD).*

*The Eco-3D campaign, led by Jon Ranson (618) and Lola Fatoyinbo (618), continues this week with flights in Maine, Quebec, and New Hampshire, following a brief hiatus for Hurricane Irene. The campaign includes a range of GSFC scientists for data collection with threee different sensors: the Digital Beamforming SAR (DB-SAR; PI Rafael Rincon 555); the dual-wavelength, polarimetric, photon counting lidar (SIMPL; PI Dave Harding 698), and the optical, multi-wavelength Cloud Absorption Radiometer (CAR, PI Charles Gatebe 613). Although the timing of the hurricane interrupted planned data collection last week, the teams now have the opportunity to collect both pre and post-hurricane data for study sites in Virginia and Maine. Follow along with the flight campaign on their Earth Observatory blog, Eco3D: exploring the third dimension of Forest Carbon (http://earthobservatory.nasa.gov/blogs/fromthefield/).*